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United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

Committee on Southwestern Cotton Culture,

WASHINGTON, D. C.

COTTON AS A CROP FOR THE YUMA RECLAMATION PROJECT.

REASONS FOR GROWING COTTON.

There is needed in the Yuma Valley a crop that will bring in a large cash return per acre and that can be grown in rotation with alfalfa. The farmers of the valley have demonstrated that alfalfa can be grown there profitably for seed and for hay, and this crop is likely to remain the most important source of wealth to the Yuma Reclamation Project. But it is not profitable to grow alfalfa continuously. It succeeds much better when grown in rotation with some crop that can be cultivated, which thus serves as a cleaning crop to put the land in better condition to again grow alfalfa. Cotton is admirably suited to such a rotation. Some of the reasons why this crop should be seriously considered by farmers in the Yuma Valley are:

(1) Cotton is a money crop, finding a relatively certain and stable market, and not subject to rapid deterioration as are most fruit and vegetable crops. The sale of cotton will bring outside money into the community.

(2) Cotton can be grown profitably on raw land when not too sandy and when, as is usually the case in the Yuma Valley, the soil already contains an abundant supply of organic matter. Land of this character in the Imperial Valley has produced paying crops of cotton during four successive years. The yields on such land are, however, not to be compared with those obtainable on land which has been in alfalfa. Furthermore, raw land must be particularly well leveled and prepared if a profitable yield of cotton is to be produced.

(3) Cotton is an intertilled crop and is admirably adapted to cleaning up weedy alfalfa fields. Bermuda grass, which is such a pest in the Yuma Valley, can soon be gotten rid of by growing cotton, provided the crop is properly cultivated. This has already been demonstrated in the Salt River Valley.

(4) Cotton requires much less water than alfalfa, and hence the growing of this crop would tend to keep down the water table in the valley and reduce the likelihood of damage to the land by seepage.

(5) Cotton would supplement rather than replace the crops already grown in the valley. Rotation of cotton and alfalfa would insure a well-balanced type of agriculture, especially if dairying becomes an important industry of the valley, cotton seed in the form of both meal and cake being a valuable stock food.

(6) Cotton is well adapted to the climatic conditions of the locality, since the hard work of cultivation is finished by the end of June and the picking does not begin until the latter part of September. During the hottest part of the summer practically the only work required in connection with this crop is irrigation, followed by horse cultivation. During the months of July and August, however, this crop must be closely watched, in order to be sure that it receives irrigation at the right time; otherwise both the yield and quality of the fiber will be impaired.

(7) Cotton culture offers no serious problems to the farmer who has had experience in growing such crops as alfalfa, corn, and milo under irrigation. The method of cultivation is much the same as in the case of Indian corn. Certain precautions are necessary in regard to the time of irrigation and the quantity of water applied, but these are easily learned. Some of the most successful cotton growers in the Imperial and Salt River Valleys had had no previous experience either in irrigation farming or in growing cotton.

COTTON A COMMUNITY CROP.

Cotton is not a crop which can be handled successfully in a new district by the individual farmer without cooperation. The purchase of gins and presses, the marketing of the product to advantage, and the insurance of a sufficient supply of labor for picking the crop, all demand community action. The successful establishment of cotton growing in the Imperial and Salt River Valleys has been possible only through cooperative action by the growers. If cotton growing is to be undertaken in the Yuma Valley in 1914, the farmers should at once take steps to form an association and should secure pledges of a sufficient acreage to warrant the establishment of a ginning plant. It is believed that not less than 1,000 acres should be planted the first year. Only 600 acres of cotton were grown the first year in Imperial Valley, and the small size of the crop made ginning very expensive. Furthermore, the experience of other communities has shown that it is difficult to market a few hundred bales to the best advantage, while a crop of 1,000 bales is sufficient to interest buyers and manufacturers, insuring competition, and hence increasing the chance of selling at a good price.

Since few of the farmers in the Yuma Valley have had previous experience in growing cotton, it will be advisable for each grower to limit his acreage during the first season to what he can safely handle. It would probably be best in most cases to plant only as many acres as the farmer and his family can pick without depending upon outside labor; that is, about 2 acres of Egyptian or 3 or 4 acres of Durango for each available picker. After the first year the grower,

having become familiar with the crop, can determine for himself how large an acreage he is able to manage in such a way as to insure large yields and a product of high quality.

KIND OF COTTON TO BE GROWN.

In view of the high price of land and water in the irrigated sections of the Southwest it is advisable that something better than ordinary short-staple cotton should be grown. While the production of short staple might be profitable so long as Middling Upland sells at the present price, there is no assurance that this condition will continue. On the other hand, the world's supply of long-staple cotton (fiber measuring $1\frac{1}{4}$ inches or longer) falls decidedly short of the demand, and there is little prospect that this condition will change materially in the near future. Spinners of fine cotton, both in the United States and in Europe, have stated repeatedly during the past two or three years that they could use larger quantities of staple cotton if a sufficient supply were available to steady the market and warrant their making the necessary adjustments of their operations. This being the case, it would seem inadvisable for the farmers of the Yuma Valley, if they decide to undertake cotton growing, to begin with any but a long-staple variety.

Two types of long-staple cotton, Egyptian and Durango, have been acclimatized and bred in the Southwest by the Department of Agriculture. Both have been thoroughly tested under irrigation in that section, first by the Department of Agriculture, and later by farmers in the Imperial and Salt River Valleys as well as on the Yuma Reclamation Project. As a result of these tests the cotton growers of the Salt River Valley have decided upon Egyptian cotton as the type best meeting their particular requirements, while in the Imperial Valley the preference has been given to Durango cotton. The variety of Egyptian cotton which is being successfully grown in the Salt River Valley has fiber averaging from $1\frac{7}{16}$ to $1\frac{1}{2}$ inches in length, and the product has been found by spinners to compare very favorably with the best grades of imported Egyptian cotton. The Durango cotton, a long-staple Upland type originally introduced from Mexico, has fiber averging in length from $1\frac{3}{16}$ to $1\frac{1}{4}$ inches.

It has been demonstrated that both of these types of cotton can be grown successfully and profitably on the Yuma Reclamation Project. The arguments for and against each of these types are, briefly, as follows:

Egyptian cotton has the longer fiber and brings at present about 5 cents more than Durango per pound of lint. The area in which this type of cotton can be successfully produced is apparently limited to a few hundred thousand acres of irrigated land in the southwestern United States in addition to the cotton-growing acreage of Egypt, which is less than 2,000,000, and a small area in Algeria.

The situation is very different as regards 1½-inch cotton of the Durango and similar types, which can be grown without irrigation in the greater part of the cotton belt of the southeastern United States and probably in many countries where attempts to grow Egyptian cotton have so far resulted in failure. It would therefore seem likely that in the long run the Yuma Valley would encounter more severe competition in growing Durango than in growing Egyptian cotton.

Durango cotton is less expensive to pick, because the bolls are larger. A price of \$1.25 per hundred pounds of seed cotton is being paid this year in the Imperial Valley for picking Durango, while \$2 per hundred pounds is being paid in the Salt River Valley for picking Egyptian. On the other hand, the work of picking the Egyptian is lighter and more pleasant, so that this type of cotton seems better adapted to communities where the farms are small and where most of the picking will be done by the farmers and their families. Durango cotton can be ginned on a saw gin at about one-half the cost for Egyptian, which must be ginned on a roller gin.

Let us assume (1) that the cost of picking will be \$2 per 100 pounds of seed cotton for Egyptian and \$1.25 for Durango, (2) that the cost of ginning will be \$9 per bale for Egyptian and \$4.50 per bale for Durango, (3) that each variety yields 28 per cent of lint, (4) that Egyptian is selling for 20 cents per pound of lint while Durango is selling for 15 cents. On this basis the grower would receive for a 500-pound bale, after deducting the cost of picking and ginning, \$55 for Egyptian cotton and \$48 for Durango cotton. The other costs of production, which are about the same for both types of cotton, must be deducted in figuring the net returns.

As regards yield, there seems to be little choice between the two types. Numerous farmers growing Egyptian cotton in the Salt River Valley and Durango cotton in the Imperial Valley have obtained yields of 1 bale per acre, while in both localities yields of 1½ bales per acre have been obtained in some instances. It has proved difficult in many cases to secure a full stand of Durango cotton in the Imperial Valley owing to the fuzziness of the seeds, which hinders germination. In the case of Egyptian cotton a full stand is more easily obtained, the nearly smooth seeds allowing better contact with the soil. On the other hand, Durango cotton ripens earlier and in seasons of very early frost a larger proportion of the crop would probably escape frost injury.

While under present market conditions the profits obtained from Egyptian cotton may not greatly exceed those obtained from Durango, the probabilities are that in the long run Egyptian cotton will prove much more satisfactory and bring the larger returns. It seems advisable, therefore, to recommend the growing of Egyptian cotton on the Yuma Reclamation Project, though the final decision, as in all such cases, rests with the farmers themselves.

It is suggested that if the farmers of the Yuma Valley decide to undertake cotton growing and organize an association for this purpose, their first step might be to send a committee to investigate the conditions existing in the Salt River and Imperial Valleys and upon the basis of the information thus obtained make their decision as to which type of cotton they wish to grow. Whether their final decision is in favor of the Egyptian or the Durango type, they will have the benefit of the experience of one or the other of these communities in growing and marketing the crop.

ONLY ONE TYPE SHOULD BE GROWN IN THE COMMUNITY.

Whatever type should be decided upon, no effort should be spared to keep all other kinds of cotton out of the Yuma Valley. The experience of older cotton-growing communities has shown that nothing but evil results when more than one type of cotton is grown in a locality. This is especially the case if long-staple cotton is produced, since uniformity of the product is a most important factor in securing a high price. If more than one type is grown in a region, cross-pollinization will take place in the fields and the seeds will become mixed in the gins and storerooms. It will prove impossible to maintain a uniform product under these conditions. It will also be found much easier to market the cotton to advantage if the community obtains from the start the reputation of producing only a single high-grade type of cotton.

The Yuma Valley has at present a great advantage over any older cotton-growing community which might desire to undertake the production of a long-staple type of cotton, since as yet there has been practically no commercial production of cotton in the valley and it is within the power of the growers' association to keep out all but one type. This advantage was also possessed by the Salt River Valley when that community took up the growing of Egyptian cotton, and thus far the growers' associations of the Salt River Valley have had no difficulty in confining the production in that community to a single type. On the other hand, when the growing of Durango cotton was undertaken in the Imperial Valley, short-staple cotton had been grown there for several years, and it has not yet proved feasible to eliminate the short staple and establish the high commercial reputation which that valley should have. Great difficulty is being encountered in securing and maintaining a supply of pure seed of the Durango variety in the presence of the short staple.

ASSISTANCE OF THE DEPARTMENT OF AGRICULTURE.

In case the farmers of the Yuma Valley should decide to undertake cotton growing and should organize an association for this purpose, the Department of Agriculture will gladly furnish all the assistance in its power. Mr. R. E. Blair, superintendent of the Yuma Project Experiment Farm, at Bard, Cal.; Mr. Argyle McLachlan, who is familiar with Durango cotton in the Imperial Valley, and whose present headquarters are at El Centro, Cal.; and Mr. E. W. Hudson, who is familiar with Egyptian cotton in the Salt River Valley, and whose address is Sacaton, Ariz., are prepared to furnish information and advice when requested, either by letter or by conference with the farmers. In addition, the Chief of the Office of Markets,

United States Department of Agriculture, Washington, D. C., will give all possible help to the community in establishing a cooperative organization.

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Approved:

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